

REMARKS

I. INTRODUCTION

The Examiner is thanked for noting the typographical error made in the REMARKS section of the Amendment filed April 30, 2003, where claim 10, although canceled, was erroneously stated as pending and under consideration.

Claim 9 has been amended. No new matter is being presented, and approval and entry is respectfully requested.

Claims 9, 11-17, 29-40 and 49-63 are pending.

II. THE REJECTION UNDER 35 U.S.C. §102(b)

Claim 9 stands rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by U.S. Patent No. 5,449,590 to Imaino et al. (hereinafter Imaino).

Applicants respectfully traverse this rejection for the following reasons. Claim 9, as amended, recites a method for compensating for defocus of an optical recording medium comprising amongst other novel features "compensating a recording signal with respect to the detected defocus, including adjusting a write power level required for recording the recording signal."

Imaino discloses an optical data storage system comprising a multiple data surface medium and optical head. The medium comprises a plurality of substrates separated by a light transmissive medium. Data surfaces are located on the substrate surfaces. A layer of a dye material is deposited onto each layer of the data surfaces. The thickness of the dye layer determines the amount of reflectivity for each of the data surfaces (abstract).

Imaino further discloses a disk drive comprising a laser for generating a laser beam, and an optical transmission channel that directs the light to the medium. The transmission channel includes a focus element for focusing the lights and an aberration compensator to correct for

aberrations. A reception channel receives reflected light from the medium, and comprises detectors for receiving the reflected light and circuitry for generating data and signals (column 2, lines 27-39). Imaino also discloses an optical drive that may adjust the laser power and/or the amplification of the optical detectors.

However, rather than adjusting a **write power** level required for recording the recording signal in order to compensate for defocus as recited in amended independent claim 9, Imaino discloses, that the optical drive may adjust the laser power and/or the amplification of the optical detectors to compensate for the different effective reflectivities of each layer (column 10, lines 23-26). That is, Imaino appears to teach adjusting a **reproducing power** to compensate for different reflectivities of the layers. Accordingly, although Imaino discloses adjusting a laser power, Imaino fails to teach or suggest adjusting a write power level required for recording the recording signal in order to compensate for defocus as recited in newly amended, independent claim 9.

Accordingly, Applicants respectfully assert that the rejection under 35 U.S.C. §102(b) should be withdrawn because Imaino does not teach or suggest each feature of independent claim 9, as amended.

III. THE REJECTION UNDER 35 U.S.C §103

Claims 11-17, 29-40 and 49-63 stand rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Imaino as applied to claim 9 above and in view of U.S. Patent No. 5,848,045 to Kirino (hereinafter Kirino). Applicants respectfully traverse these rejections for the following reasons.

Regarding the rejection of independent claims 11 and 51, Applicants respectfully traverse these rejections for the following reasons. Independent claim 11 recites, amongst other novel features, "detecting the defocus of the optical recording medium," and

“compensating a write pulse with respect to the detected defocus using a predetermined scheme, wherein the write pulse comprises a predetermined recording pattern.”

Independent claim 51 recites, amongst other novel features, “detecting a defocus of an optical recording medium” and “adaptively compensating a write pulse with respect to the detected defocus using a predetermined scheme stored in a memory, wherein the write pulse comprises a predetermined recording pattern.”

The Office Action alleges that Imaino discloses some of the claimed features of independent claims 11 and 51, and refers to column 13, lines 9-27 and column 14, lines 3-37 for such alleged teachings.

However, at column 13, lines 9-27, Imaino discloses an optical head 22 and medium 12. Imaino further teaches that the optical head has a laser diode 200, lens 203, circulator 204, beam splitter 205, focus lens 206 and an optical detector 207, used to monitor the power beam 202. Imaino further discloses a mirror 208, focus lens 210, a multiple data surface aberration compensator 212, a lens holder 214, and a focus actuator motor 216. At column 14, lines 3-37, describe Imaino the operation of system 10. The system operates by causing motor 16 to rotate disk 12 and cause motor 26 to move head 22 to the proper position below disk 12. Laser 200 is energized to read data from disk 12. The beam 202 is focused by lens 210 on the data surface 96. The reflected beam returns and is divided into three beams. One of the beams is used to provide focus and tracking information. When beam 202 is exactly focused on data surface 96, beam 230 will have a circular cross-section 350 on detector 234. This will cause circuit 264 to output a zero focus error signal. If beam 202 is slightly out of focus, beam 230 will fall as an oval pattern. This will cause circuit 264 to output a positive or negative focus error signal. Controller 314 will use the focus error signal to control motor 216 to move lens 210 until zero focus error signal is achieved.

Accordingly, Imaino teaches correcting the focus by moving and adjusting lens 210 so

that beam 202 is exactly focused on data surface 96.

Contrary to Imaino independent claims 11 and 51, teach compensating a write pulse with respect to the detected defocus using a predetermined scheme.

Kirino fails to cure the deficiencies of Imaino. Kirino discloses an apparatus for high-density optical recordings by suppressing changes in the recording mark shape due to changes in recording sensitivity and edge shifts by providing a precise recording mark shape control method. Kirino fails to teach or suggest, "compensating a write pulse with respect to the detected defocus using a predetermined scheme," as recited in independent claims 11 and 51.

Accordingly, Applicants respectfully assert that the rejections under 35 U.S.C. § 103(a) should be withdrawn because neither Imaino nor Kirino, whether taken singly or combined, teach or suggest each feature of independent claims 11 and 51.

Furthermore, Applicants respectfully assert that dependent claims 12-16 and 58, and dependent claims 52-56 and 60, are allowable at least because of their dependence from independent claims 11 and 51, respectively, and the reasons set forth above.

Regarding the rejection of independent claims 17 and 39, Applicants respectively traverse these rejections for the following reasons. The Office Action alleges that Imaino teaches compensating the recording pattern with respect to the detected tilt and/or defocus using a memory, wherein the memory stores data comprising a write power to compensate with respect to the detected defocus. The Office Action relies on Fig. 10, unit 314 and column 13, lines 47 to column 14, line 46 for such an alleged teaching. However, at these citations, Imaino simply discloses a circuit diagram of a channel circuit. Imaino discloses the components of the circuit, such as a focus error circuit 264, amplifiers 280, 282, 284, 286, summing amplifiers 294 and 296, a focus error signals peak detector 310, a track error signal 312, and a controller 314. Imaino further teaches a process by which a focus error is corrected. For example, when beam

202 is exactly focused on data surface 96, beam 230 will have a circular cross-section 350 on detector 234. This will cause circuit 264 to output a zero focus error signal. If beam 202 is slightly out of focus one way or the other, beam 230 will fall as an oval pattern 352 or 354 on detector 234. This will cause circuit 264 to output a positive or negative focus error signal. Controller 314 will use the focus error signal to control motor 216 to move lens 210 until zero focus error signal is achieved (column 14, lines 28-37). Accordingly, Imaino teaches detecting a focusing error by determining the shape of the laser beam and correcting such error by moving lens 210 until zero focus is achieved.

Contrary to Imaino, independent claim 17 recites a method for compensating input data for a tilt and/or a defocus comprising amongst other steps "adaptively compensating the recording pattern with respect to the detected tilt and/or defocus using a memory, wherein the memory stores data comprising: a write power to compensate with respect to the detected defocus, a power and time required for recording to compensate for an amount of shift of the recording pattern, and a power and a time required for recording to compensate for a length and a width of a recording mark with respect to the detected tilt and/or length of the recording mark."

Similarly, independent claim 39 recites an apparatus which compensates input data for tilt and/or defocus of an optical recording medium, comprising amongst other elements "a memory storing data comprising a write power to compensate with respect to the detected defocus, a power and time required for recording in order to compensate an amount of shift of the recording pattern, and a power and time required to compensate a length and width of a recording mark with respect to the detected tilt and/or length of the recording mark."

Accordingly, claims 17 and 39 recite correcting the tilt and/or defocus by using data stored on a memory, whereas Imaino teaches detecting a focusing error by determining the shape of the laser beam and correcting such error by moving lens 210 until a zero focus is achieved.

Kirino also fails to teach or suggest these features recited in independent claims 17 and 39.

Kirino discloses an apparatus for high-density optical recording by suppressing changes in the recording mark shape due to changes in recording sensitivity and edge shifts by providing a precise recording mark shape control method (column 4, lines 7-13).

Therefore, Kirino fails to cure the deficiencies of Imaino. MPEP § 2143.03 instructs that "[t]o establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. In re Royka, 409 F.2d 981, 180 USPQ 580 (CCPA 1974)."

Accordingly, Applicants respectfully assert that the rejections under 35 U.S.C. § 103(a) should be withdrawn because neither Imaino nor Kirino, whether taken singly or combined, teach or suggest each feature of independent claims 17 and 39.

Furthermore, Applicants respectfully assert that dependent claim 59 is allowable at least because of its dependence from claim 17 and the reasons set forth above. Applicants also respectfully assert that dependent claim 40 is allowable at least because of its dependence from claim 39 and the reasons set forth above.

Regarding the rejection of independent claim 29, Applicants respectfully traverse this rejection for the following reasons.

Independent claim 29 recites an apparatus which compensates for tilt and/or defocus, comprising, amongst other elements, "a recording compensator which compensates a recording pulse with respect to the detected tilt and defocus using a predetermined scheme to adjust a length and a width of a recording mark according to the detected tilt and/or defocus."

The Office Action relies upon Fig. 7, unit 212 for an alleged teaching of a recording compensator that allegedly compensates a recording pulse with respect to the detected tilt and defocus using a predetermined scheme, and refers to column 13, line 9 to column 14, line 46,

and to column 10, lines 16-26.

Although, Imaino discloses a compensator 212, such compensator is an “aberration compensator,” used to obtain a good spot focus at an exact depth of an optical data storage having various reflectivity layers (column 15, lines 50-53 and column 16, lines 32-37), and not “a recording compensator which compensates a recording pulse with respect to the detected tilt and defocus using a predetermined scheme to adjust a length and a width of a recording mark according to the detected tilt and/or defocus.”

Kirino also fails to teach or suggest such features recited in claim 29.

Accordingly, Applicants respectfully assert that the rejection under 35 U.S.C. § 103(a) should be withdrawn because neither Imaino nor Kirino, whether taken singly or combined, teach or suggest each feature of independent claim 29.

Furthermore, Applicants respectfully assert that dependent claims 30-38 are allowable at least because of their dependence from independent claim 29 and the reasons set forth above.

Regarding the rejection of independent claim 49, Applicants respectfully traverse this rejection for the following reasons.

Independent claim 49 recites, amongst other processes, “adaptively compensating a length and a width of a recording signal with respect to the detected defocus and tilt using a predetermined scheme stored in a memory.”

The Office Action alleges that Imaino teaches a scheme to adjust a length and a width of a recording mark according to the detected tilt and/or defocus, citing column 13, lines 39-64 and column 19, lines 13-47.

However, at column 13, Imaino simply discloses an optical head and medium, and describes the various elements of the optical head. For example, Imaino teaches a laser diode 200, a lens 203, a circularizer 204, a beam splitter 205, a focus lens 206 and an optical detector

207. Imaino further discloses a compensator 212 and various other elements that form part of the system. At column 19, Imaino discloses the details of an aberration compensator.

Accordingly, Imaino fails to teach or fairly suggest the features recited in independent claim 49 such as “adaptively compensating a length and a width of a recording signal with respect to the detected defocus and tilt using a predetermined scheme stored in memory.”

Kirino also fails to teach the recited features of independent claim 49 and thus fails to cure the deficiencies of Imaino.

Accordingly, Applicants respectfully assert that the rejection under 35 U.S.C. § 103(a) should be withdrawn because neither Imaino nor Kirino, whether taken singly or combined, teach or suggest each feature of independent claim 49. Furthermore, Applicants respectfully assert that dependent claims 50 and 61 are allowable at least because of their dependence from independent claim 49 and the reasons set forth above.

Regarding the rejection of claim 57, Applicants respectfully traverse this rejection for the following reasons.

Independent claim 57 recites a method of compensating for defocus and/or tilt of an optical recording medium, the method comprising, amongst other processes, “compensating a write pulse with respect to the detected defocus using a predetermined scheme” and “compensating the write pulse with respect to the detected tilt so as to adjust a length and a width of a recording mark in accordance with the detected tilt.”

The Office Action recites that claim 57 stands rejected for the same reasons set forth in the rejection of claim 29. However, in the rejection of claim 29, the Office Action makes no reference to “compensating a write pulse with respect to the detected defocus using a predetermined scheme” or “compensating the write pulse with respect to the detected tilt so as to adjust a length and a width of a recording mark in accordance with the detected tilt.”

Accordingly, Imaino fails to teach or fairly suggest the features recited in independent claim 57. Kirino also fails to teach the recited features of independent claim 57 and thus fails to cure the deficiencies of Imaino.

Accordingly, Applicants respectfully assert that the rejection under 35 U.S.C. § 103(a) should be withdrawn because neither Imaino nor Kirino, whether taken singly or combined, teach or suggest each feature of independent claim 57. Furthermore, Applicants respectfully assert that dependent claims 62 and 63 are allowable at least because of their dependence from independent claim 57, and the reasons set forth above.

IV. CONCLUSION

In accordance with the foregoing, it is respectfully submitted that all outstanding objections and rejections have been overcome and/or rendered moot. And further, that all pending claims patentably distinguish over the prior art. Thus, there being no further outstanding objections or rejections, the application is submitted as being in condition for allowance which action is earnestly solicited.

If the Examiner has any remaining issues to be addressed, it is believed that prosecution can be expedited and possibly concluded by the Examiner contacting the undersigned attorney for an interview to discuss any such remaining issues.

If there are any under payments or overpayments of fees associated with the filing of this Amendment, please charge and/or credit the same to our Deposit Account No. 19-3935.

Respectfully submitted,

STAAS & HALSEY LLP

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By:  Pg. # 34, 172 for

Michael D. Stein

Registration No. 37,240

1201 New York Avenue, NW.
Suite 700
Washington, D.C. 20005
Telephone: (202) 434-1500
Facsimile: (202) 434-1501